

ADVANCES IN PHYSICS

VOLUME 34

Editor

Professor David Sherrington

Associate Editors

A. A. Abrikosov, S. Doniach

P. Fulde, J. Kanamori, D. H. Martin

Editorial Board

Sir Nevill Mott, B. R. Coles

P. Nozières, C. Rizzuto, A. Zawadowski



Taylor & Francis
London and Philadelphia

Advances in Physics

Editor

D. SHERRINGTON, Department of Physics, Imperial College,
Prince Consort Road, London SW7 2BZ, UK

Associate Editors

A. A. ABRIKOSOV, Landau Institute for Theoretical Physics,
Kosygina 2, Moscow 117334, USSR

B. R. COLES, Department of Physics, Imperial College, Prince
Consort Road, London SW7 2BZ, UK

S. DONIACH, Department of Applied Physics, Stanford,
California 94305, USA

P. FULDE, Max-Planck-Institut für Festkörperforschung, 7000
Stuttgart 80, Heisenbergstr 1, FRG

J. KANAMORI, Faculty of Science, Osaka University, Toyonaka,
Osaka 560, Japan

D. H. MARTIN, Department of Physics, Queen Mary College,
London E1 4NS, UK

Advisory Board

N. F. MOTT (Cambridge), P. NOZIÈRES (Grenoble), C. RIZZUTO
(Genoa), A. ZAWADOWSKI (Budapest)

Subscription Information

Published bimonthly

Annual subscription 1986 £136 DM544 US\$300

ISSN 0001 8732

Dollar rates apply to USA, Canada and Mexico. Deutschmark rates to FR Germany. Sterling rates apply to the UK and all other areas.

All subscriptions are payable in advance and all rates include postage. Journals are sent by air to the USA, Canada and Mexico, India and Australasia. Subscriptions are entered on an annual basis, i.e. from January to December. Payment may be made by sterling cheque, dollar cheque, international money order or National Giro, or by credit card (AMEX, VISA, Mastercard/Access).

Orders originating in the following territories should be sent direct to the local distributors:

Australia

R. Hill & Son Ltd, 117 Wellington Street, Windsor, Victoria 3181.

India

Universal Subscription Agency Pvt. Ltd, 101-102 Community Centre, Malviya Nagar Extn. Post Bag No. 8,
Saket, New Delhi-110017.

Japan

Kinokuniya Company Ltd, Journal Department, PO Box 55 Chitose, Tokyo 156.

New Zealand

R. Hill & Son Ltd, Private Bag, Newmarket, Auckland 1.

USA, Canada and Mexico

Taylor & Francis Inc, 242 Cherry Street, Philadelphia, Pennsylvania 19106-1906.

UK and all other territories

Taylor & Francis Ltd, Rankine Road, Basingstoke, Hampshire RG24 0PR.

Air freight and mailing in the USA by Publications Expediting Inc., 200 Meacham Avenue, Elmont, New York 11003. Second class postage paid at Jamaica, New York 11431. US Postmaster: Send address changes to *Advances in Physics*, Publications Expediting Inc., 200 Meacham Avenue, Elmont, New York 11003.

Published by Taylor & Francis Ltd, 4 John Street, London WC1N 2ET, UK. Printed by Taylor & Francis (Printers) Ltd, Rankine Road, Basingstoke, Hampshire RG24 0PR, UK.

Copyright © 1985 Taylor & Francis Ltd

All rights reserved. Authors are themselves responsible for obtaining permission to reproduce copyright material from other sources and are required to sign a form for agreement of the transfer of copyright. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form, or by any means, electronic, electrostatic, magnetic, mechanical, photocopying, recording or otherwise, without prior permission in writing from the copyright holder. 0001 8732 85 \$5.00 © 1985 Taylor & Francis Ltd.

Authorization to photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted by Taylor & Francis Ltd for libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the base fee is paid directly to CCC, 27 Congress Street, Salem, Massachusetts 01970, USA. (For fee per article see copyright code above.) This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising, for creating new collective works, or for resale. Fees for past articles are the same as those shown for current articles.

CONTENTS

VOLUME 34

Page
i-iii

Articles published in Volumes 29-33

Self-organization processes in continuous media

A. Hasegawa

1

Impurity states and electron transport in gapless semiconductors

I. M. Tsidilkovski, G. I. Harus and N. G. Shelushinina

43

Coexistence of superconductivity and magnetism. Theoretical predictions and experimental results

L. N. Bulaevskii, A. I. Buzdin, M. L. Kulić and S. V. Panjukov

175

Diffusion of hydrogen in metals

Y. Fukai and H. Sugimoto

263

Editorial. 80th Birthday greeting to Professor Sir Nevill Mott

327

Metal-insulator transitions in non-crystalline systems

N. F. Mott and M. Kaveh

329

Resistivity anomalies due to valence fluctuations

D. Wohlleben and B. Wittershagen

403

Neutron diffraction methods for the study of residual stress fields

A. J. Allen, M. T. Hutchings and C. G. Windsor

445

An applied science perspective of Langmuir-Blodgett films

G. G. Roberts

475

Polarization dependence of natural and field-induced one-photon and multi-photon interactions

G. E. Stedman

513

Magnetic excitations in crystal-field split 4f systems

P. Fulde and M. Loewenhaupt

589

Quantum $1/f$ noise associated with ionized impurity scattering and electron-phonon scattering in condensed matter


G. S. Kousik, C. M. Van Vliet, G. Bosman and P. H. Handel

663

A dynamic scaling assumption for phase separation

H. Furukawa

703



Digitized by the Internet Archive
in 2023 with funding from
Kahle/Austin Foundation

CONTENTS OF VOLS. 29-33

VOLUME 29

	Page
Structural phase transitions	
I. Landau theory. R. A. COWLEY	1
II. Static critical behaviour. A. D. BRUCE	111
III. Critical dynamics and quasi-elastic scattering. A. D. BRUCE and R. A. COWLEY	219
Structural properties of ionic liquids. J. E. ENDERBY and G. W. NEILSON	323
Polymers as electronic materials. J. MORT	367
Deep levels in semiconductors. M. JAROS	409
Theoretical models for superionic conductors. W. DIETERICH, P. FULDE and I. PESCHEL	527
Erratum	607
Thermal expansion of solids at low temperatures. T. H. K. BARRON, J. G. COLLINS and G. K. WHITE	609
Magnetoelectric effect in antiferromagnetic crystals. O. F. DE ALCANTARA BONFIM and G. A. GEHRING	731
Scattering of electrons by atoms. J. CALLAWAY	771
Spin glasses with short range interaction. A. A. ABRIKOSOV	869
Contact electrification. J. LOWELL and A. C. ROSE-INNES	947

VOLUME 30

^3He - ^4He quantum solutions. E. P. BASHKIN and A. E. MEYEROVICH	1
Physics of ultra-pure germanium. E. E. HALLER, W. L. HANSEN and F. S. GOULDING	93
Intercalation compounds of graphite. M. S. DRESSELHAUS and G. DRESSELHAUS	139
Quantum field theory, horizons and thermodynamics. D. W. SCIAMA, P. CANDELAS and D. DEUTSCH	327
Theory of the pressure broadening and shift of spectral lines. G. PEACH	367
Optically detected magnetic resonance (O.D.M.R.) investigations of recombination processes in semiconductors. B. C. CAVENETT	475
The Boltzmann-equation description of transport in superconductors. A. G. ARONOV, YU. M. GAL'PERIN, V. L. GUREVICH and V. I. KOZUB	539
Luminescence and recombination in hydrogenated amorphous silicon. R. A. STREET	593
Are there acoustic plasmons? J. RUVALDS	677
Dynamic non-linear optical processes in semiconductors. A. MILLER, D. A. B. MILLER and S. D. SMITH	697
Theory of electron spin resonance of magnetic ions in metals. S. E. BARNES	801

VOLUME 31

	Page
Electron energy loss in simple metals and semiconductors. K. STURM	1
Theories of electrons in one-dimensional disordered systems. P. ERDÖS and R. C. HERNDON	65
Semiconductor surfaces. D. HANEMAN	165
The topology of non-uniform media in condensed matter physics. H.-R. TREBIN	195
Streaming motion and population inversion of hot carriers in crossed electric and magnetic fields. S. KOMIYAMA	255
Organic conductors and superconductors. D. JÉROME and H. J. SCHULZ	299
Creation of lattice defects by electronic excitation in alkali halides. N. ITOH	491
Frequency-dependent loss in amorphous semiconductors. A. R. LONG	553
A general solution of the Einstein equations with a time singularity. V. A. BELINSKII, I. M. KHALATNIKOV and E. M. LIFSHITZ	639
Broken ergodicity. R. G. PALMER	669

VOLUME 32

Angle-resolved measurements of the photoemission of electrons in the study of solids. F. J. HIMPSEL	1
Supersymmetry and theory of disordered metals. K. B. EFETOV	53
Critical behaviour of the phase transition in the 2D Ising Model with impurities. VIK. S. DOTSENKO and VL. S. DOTSENKO	129
Generalized hydrodynamics of systems of Brownian particles. W. HESS and R. KLEIN	173
Compositional and doping superlattices in III-V semiconductors. K. PLOOG and G. H. DÖHLER	285
Electronic structure of amorphous semiconductors. J. ROBERTSON	361
Exact results in the theory of magnetic alloys. A. M. TSVELICK and P. B. WIEGMANN	453
Theory of interacting donor electrons in the Anderson-localized regime of semiconductors. T. TAKEMORI and H. KAMIMURA	715
Transport phenomena at metal surfaces. L. A. FALCOVSKY	753
Morphology and statistical statics of simple microclusters. M. R. HOARE and J. A. MCINNES	791
The optical properties of thallium-like impurities in alkali-halide crystals. A. RANFAGNI, D. MUGNAI, M. BACCI, G. VILIANI and M. P. FONTANA	823

VOLUME 33

	Page
The smectic state. J. PROST	1
Electric currents and resistive states in thin superconductors. B. I. IVLEV and N. B. KOPNIN	47
NMR-NQR studies of structural phase transitions. A. RIGAMONTI	115
Semimagnetic semiconductors. N. B. BRANDT and V. V. MOSHCHALKOV	193
Electron-electron scattering in conducting materials. M. KAVEH and N. WISER	257
Concentrated Kondo systems. N. B. BRANDT and V. V. MOSHCHALKOV	373
High pressure properties of graphite and its intercalation compounds. R. CLARKE and C. UHER	469
EXAFS in catalysis. P. LAGARDE and H. DEXPERT	567
Sonoluminescence. A. J. WALTON and G. T. REYNOLDS	595

